What is claimed is:

1. A system for detecting a small fiber loss on a fiber, the system comprising:

   a first channel having a first wavelength coupled to the fiber;

   a second channel having a second wavelength different than the first wavelength, the second channel coupled to the fiber; and

   at least one photodetector circuitry coupled to the fiber at a monitor point for detecting a change in the power ratio between the first and second channels for detecting a small fiber communication loss at any location along the fiber.

2. The system of claim 1, further comprising an alarming switch for alarming and disconnecting the fiber at a switch point within an amplifier hut close to the monitor point.

3. The system of claim 1, further comprising an optical time domain reflectometer (OTDR) at a transmitter for launching an OTDR pulse in a switchable OTDR feedback path coupled to the monitor point for determining the location along the fiber of the small fiber loss.

4. The system of claim 3, further comprising a semiconductor optical amplifier (SOA) coupled in the switchable OTDR feedback path with the fiber for amplifying the OTDR pulse.

5. The system of claim 1, wherein the first and second channels comprise circuitry for generating a first and second optical supervisory channels (OSCs).

6. The system in accordance with claim 5 wherein the at least one photodetector circuitry further comprises circuitry for indicating that the fiber integrity is intact if the change in ratio detected from a previously measured value is approximately equal to zero and for indicating that the fiber integrity is breached if the change in ratio detected is much greater than zero.

7. The system in accordance with claim 6 wherein the first and second OSC channels comprise a first laser and a second laser correspondingly connected to a first and a second OSC filter for providing the first and second wavelengths at approximately 1510nm and approximately 1625nm.

8. In a system having at least two nodes connected by a fiber path, a method for detecting a fiber condition along the fiber path, the method comprising the steps of:

providing a feedback path to couple with the fiber path to form a feedback loop; and

measuring the fiber condition on the fiber path in response to a detected change along the feedback path.

9. The method in accordance with claim 8 wherein the measuring step comprises the steps of:

generating a first marker wavelength on the feedback loop;

generating a second marker wavelength on the feedback loop, wherein the generated marker first and second wavelengths are first and second optical supervisory channels (OSCs) having different wavelengths each having a different wavelength dependent fiber attenuation;

detecting, at one of the nodes, a power ratio between the generated first marker wavelength and the second marker wavelength;

determining that there is a fiber integrity breach condition when the detecting step indicates a ratio change from a previously measured value much greater than zero; and

determining that there is no fiber integrity breach condition when the detecting step indicates a ratio change from the previously measured value approximately equal to zero.

10. The method according to claim 9 wherein the providing step comprises the steps of:

replacing isolators of amplifiers with circulators in the fiber path;

inserting an amplifier and a filter for enhancing the signal on the feedback path for measurement in the fiber path.

11. A method for detecting fiber integrity, the method comprising the steps of:

monitoring two out-of-signal-band wavelengths;

determining the power ratio of the two out-of-signal-band wavelengths, and

alarming a fiber integrity tampered condition when the power ratio of the two out-of-signal-band wavelengths changes significantly.

12. The method of claim 11 further comprising:

providing a first wavelength outside a signal bandwidth; and

providing a second wavelength outside the signal bandwidth, the second wavelength different than the first wavelength.

13. The method of claim 12 wherein the determining step further includes measuring a power variation at the second wavelength compared to the variation at the first wavelength as the power ratio between the first and second wavelengths.

14. The method of claim 13 wherein the alarming step comprises indicating when the power variation from a previous to a current value is greater than the absolute value of about 0.25 dB in the power ratio between the first and second wavelengths for detecting a fiber security breach at any location along the fiber.

15. The method of claim 14 further comprising disconnecting the fiber for minimizing the fiber security breach.

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16. The method of claim 14 further comprising the steps of:

launching an optical time domain reflectometer (OTDR) pulse;

amplifying the OTDR pulse in a feedback path with the fiber; and

determining the precise tampered location along the fiber in response to the delay of the OTDR pulse for finding the fiber security breach.

17. The method of claim 16 further comprising disconnecting the fiber at a closest switchable position approximate the precise tampered location for minimizing the fiber security breach.

18. The method of claim 14 wherein the alarming step comprises indicating when the fiber security breach is from either a fiber tap detected or a rogue signal inserted at a Raman coupled point at any location along the fiber depending on the sign of the power ratio variation.

19. The system of claim 3, further comprising a narrow band optical filter coupled in the switchable OTDR feedback path with the fiber for filtering the OTDR pulse.

20. The method of claim 12 wherein the providing steps comprises providing the first and second wavelengths having a power level greater than about 0dBm and within a bandwidth from about the singlemode cut-off wavelength for the fiber to the highest wavelength of the fiber where the attenuation of the fiber is greater than 2dB from the attenuation at the singlemode cut-off wavelength for the fiber.